

Annual Report
1971-1972

PLANT PEST CONTROL DIVISION

The Plant Pest Control Division has as its prime objective the protection of the State's agricultural, horticultural and forestry resources from the depredation of injurious insects or plant diseases. Additionally in May 1972, the Division assumed the responsibility for the eradication or control of marijuana and multiflora rose as a result of amendments to the Plant Pest Act by the Legislature which declared these plants to be noxious weeds. Funds were made available for work to begin immediately.

In addition to the Plant Pest Act, which authorizes and requires the Division to perform the three major functions of Regulation, Survey and Control, the Division also enforces the West Virginia Apiary Law.

A brief summary of the accomplishments of this Division are as follows: inspected 8,887 colonies of honey bees; registered 1,863 beekeepers with 19,842 colonies; inspected and registered 204 nurseries and 289 nursery dealers and registered 96 agents; destroyed 40,218 ribes bushes as a part of the white pine blister rust control program; destroyed 1,819,885 wild barberry bushes in order to protect small grains from the disease known as Stem Rust of Wheat; treated 2,848 oak trees infected with Oak Wilt disease; surveyed over 75,000 square miles by air and ground for symptoms of injurious insects and plant diseases and for noxious weeds; utilized 9500 traps in a survey to detect Gypsy moth and 10 black light traps to survey for injurious insects capable of damaging agricultural crops or our forest resources; in cooperation with the USDA, APHIS, we released over 160,000 parasites of the Cereal leaf beetle; examined potatoes grown on approximately 1 acre of land in the Thomas-Davis area for potato wart disease; destroyed all multiflora rose growing on a total of 630 acres made up of scattered blocks in Gilmer, Calhoun, and Wirt Counties; destroyed the marijuana growing on 495 acres in Hampshire County; and we assisted four communities in treating 225 acres of sod with 325 pounds of milky disease spore dust (of which 175 pounds were contributed by the Division) for the control of Japanese beetles. In addition, we continued to operate a Pest Identification Lab where insect or plant disease problems are diagnosed; published three newsletters on a regular basis; prepared two new department brochures, wrote numerous articles for newspapers and other departmental publications; and continued to expand and service the Reference Insect Collection.

Further details of these and other activities are included in the following specific reports.

APIARY INSPECTION

The objectives of this program are to control bee diseases and to promote beekeeping in West Virginia.

The State Bee Specialist, Mr. Earl Cochran, and three part-time inspectors were able to inspect 8,887 colonies of honey bees located in 724 apiaries or bee yards. Of this total, 450 colonies were dead when examined and 148 or 1.66 percent were found to be infected with American Foulbrood. Drug therapy was recommended for 57 of these colonies and 91 were destroyed. Of the total colonies inspected 1,451 were found to be housed in box hives (hives with no movable frames to permit adequate inspection and hives completely incapable of producing surplus honey in marketable quantities).

The extremely mild weather in December and January caused the loss of numerous bees in the State and a killing frost on June 11 has seriously reduced the nectar sources and therefore the honey production for this year.

American Foulbrood is still evident in many areas of the State and, particularly in the Eastern Panhandle where bees are so important as pollinators, considerable work still remains to get the level of AFB down to an acceptable point.

Plans are being made to hold the 1973 Eastern Apicultural Society meeting at the West Virginia University. This undoubtedly will be one of the largest Agricultural meetings ever held at West Virginia University.

BIOLOGICAL PEST CONTROL

In cooperation with the USDA-APHIS several species of tiny insects parasitic on the Cereal leaf beetle eggs or pupae were released in Cabell, Putnam, Pleasants, Marshall, Ohio, Monroe, Berkeley, Wood, Mason and Monongalia Counties. It is hoped that these insects will establish themselves and become an important factor in reducing damage or loss of small grains and grasses by the Cereal leaf beetle.

The Division assisted community groups in Union, West Virginia, Triadelphia, New Martinsville and Scott Depot, West Virginia in applying Milky Disease Spore Dust in an effort to reduce the populations of Japanese beetles. A total of 175 pounds of spore dust was contributed to these groups along with literature regarding the Japanese beetle and equipment to apply the dust. At least one man from the Division visited each group to instruct and advise them regarding their programs. In all approximately 225 acres were treated.

The Division also assisted the USDA-APHIS and Methods Improvement by establishing one of a series of plots using 16 Japanese beetle traps placed on a 25' grid and baited with a new lure or attractant. The traps will be checked periodically throughout the beetle season and the effectiveness of the lure will be evaluated when the statistics from all of the sites are collected by the USDA.

Plans are underway to attempt to establish three field insectaries where a weevil which is predacious on musk and curled thistle can later be collected for redistribution. Musk and curled thistle are becoming major weed pests in pastureland in the eastern counties.

Plans are also underway to begin a new parasite mass rearing laboratory which will mark the beginning of real Biological Pest Control Program in West Virginia. Initially, the efforts of this facility will be directed toward the rearing of one or more insect species known to be parasitic on the Gypsy moth and certain foliage damaging pests native to or already in West Virginia.

COOPERATIVE ECONOMIC INSECT SURVEY

This program, a cooperative one with the USDA, has the following objectives:

- 1) To aid in the prompt detection of newly introduced pests
- 2) To forecast the possible build-up of insect populations on selected farm crops so that producers can be advised if controls are needed.
- 3) To report on crop losses due to insects
- 4) To maintain records of insect distribution in West Virginia and to maintain a collection of insects for reference purposes.
- 5) To provide for the identification of insect pests as a service to the citizens of the State. This is accomplished through the Division's Pest Identification Laboratory.

Mr. Jan D. Hacker, the State Survey Entomologist, is working with the County Extension Agents to develop a better survey program to include the principle growers and crops in their respective areas.

The Pest Identification Lab this year examined over 300 specimens submitted by individuals requesting service, prepared 30 Cooperative Economic Insect Reports for submission to the USDA, made two television appearances and assisted at a Pest Identification Clinic in Wheeling held by the West Virginia University Extension Service. In addition, a Cereal leaf beetle survey was made in cooperation with scientists at Purdue University.

No unusual agricultural pest build-ups were observed this year.

FOREST INSECT AND DISEASE SURVEY

A Forest Entomologist, Mr. Alan Miller, and a Plant Pathologist, Mr. James Brooks, make up the staff for this program which operates in cooperation with the U.S. Forest Service and the Forestry Division of the West Virginia Department of Natural Resources. The purpose of the program is to maintain a continual surveillance of the State's forests to detect newly introduced pests or to predict the possible build-up of injurious insects or plant diseases and to participate in control activities when these are needed. The Service Foresters assist in this program by reporting unusual insects or diseases or unusual outbreaks of pests.

Four newsletters and one detailed Annual Summary relating to forest insect and disease conditions were published this year. When appropriate, news releases pertaining to forest pest occurrences are made available to the news media. Systematic early detection surveys were made for such insects as Forest Tent Caterpillars, Eastern Tent Caterpillars, Virginia Pine Sawfly and Oak Leaf Tier. None of these were a real problem this year. An early hatch of Virginia Pine Sawfly occurred in January and subsequent below zero weather killed the exposed larvae and ready-to-hatch eggs. Virus diseases have effectively reduced the Eastern Tent Caterpillar damage in many areas. Brood XI of the Periodical Cicada which should have emerged in Fayette County in May or June of 1971 still has not been observed and is no doubt now lost forever in West Virginia.

Growth impact studies have been initiated to determine the economic loss to several tree species by several insect or disease pests. A basic plant pathology laboratory has been equipped to aid in the diagnosis of plant diseases for both the Pest Identification Lab and the Forest Insect and Disease Survey. Along with the Oak Wilt Program Leader an injector has been developed which should prove of value in controlling some tree diseases and in treating urban Oak Wilt infected trees.

Numerous reports of tree damage resembling that caused by air pollutants are being investigated by the plant pathologist.

Incidental projects undertaken in addition those already described include: A walnut-nectria evaluation; investigation into a decline of Scots pine along with apparent sap sucker damage; a white pine tip burn complex and numerous field investigations on request of foresters or other property owners.

GYPSY MOTH

The 1971 Gypsy moth survey and detection program utilized approximately 3000 sex lure placed in the northeastern counties and in selected sites throughout the State. By the end of August all traps were taken down and examined. No Gypsy moths were recovered.

In the northeastern United States this insect continued to spread to the south and west. Approximately 1.9 million acres of forest lands were effected to one degree or another and nearly 500,000 acres were

completely defoliated. It became apparent that artificial spread of the pest by mobile homes, camper vehicles and by other materials originating in the generally infested area was a real threat.. The USDA and the involved States stepped up their regulatory activities in order to minimize these possibilities. The Interstate Pest Control Compact contributed funds to assist in these stepped up activities.

In June of 1972 approximately 40 men (three of which were employed by this Division and the balance employed by the USDA) under the direction of the USDA-APHIS began placing 9500 traps in West Virginia. In the north-eastern counties the traps were placed on a modified one mile grid system and in the remainder of the State's counties the traps were placed on a three mile grid. The West Virginia Department of Natural Resources, Forestry Division, Wildlife Division and State Parks personnel assisted by placing traps in the camping areas under their supervision. Personnel of the Division also assisted in the trapping program.

All of the traps were in place by early July 1972. The results of this years survey will be known in August.

JAPANESE BEETLE

The objective of this program is to assist landowners and civic groups in organizing and carrying out control programs to combat the Japanese Beetle. The division's role in these programs is to provide technical assistance and to assist in providing needed materials and equipment.

During the fiscal year the Division participated in biological control programs in Monroe, Putnam, Wetzel and Ohio Counties. These programs involved the use of Milky White Disease Spore Dust, a bacterial organism which destroys the larvae of the beetle. A total of 175 pounds of spore dust was contributed by the Division for operation of these programs. Cooperating civic groups contributed 150 pounds of spore dust. A total of 225 acres of sod were treated in the four counties involved.

The Division assisted the USDA-APHIS in establishing a trap plot in Kanawha County. This plot was established to test a new Japanese Beetle bait lure.

NURSERY INSPECTION

During the fiscal year 204 nurseries, 289 nursery dealers and 96 agents registered in compliance with the Plant Pest Act.

All nurseries, most of the nursery dealers, and the Christmas tree dealers were visited during the year with a total of over 800 visits or revisits being made for the purpose of examining nursery stock for insects and diseases or for regulatory purposes.

The most common plant pests encountered were aphids, mites, scale insects, bagworms, sawflys, black vine weevil, Japanese beetles and borers. Diseases in the nurseries include cylindrocladium, phythopthera and pythium root rots, cytospora and nectria cankers, anthracnose, phomopsis twig

blight and lophodermium needle cast. Several white pines in some Christmas tree plantations displayed symptoms of air pollution (Sulphur dioxide and ozone) damage known as chlorotic dwarf. The State Nursery Inspector was called upon to investigate several complaints of plant damage in Wetzel County and this damage was diagnosed as having been caused by air pollution.

A Nursery Newsletter is published monthly and an official list of registered and inspected nurseries is compiled annually. A West Virginia Nursery Stock Availability list is compiled annually for distribution to nurserymen, landscape contractors, builders, etc., as a means of promoting the sale of State grown trees and shrubs.

NOXIOUS WEED ERADICATION PROGRAM

The Noxious Weed Eradication Program is a new addition to the Plant Pest Control Division. This program is the result of an amendment to the Plant Pest Act passed by the 1972 State Legislature. The amendment declared multiflora rose and marijuana to be noxious weeds. A total of \$60,000 was appropriated to finance the new program. These funds became available for early expenditures in May, 1972. The activities of the program are divided into two working sections. The Multiflora Rose Section with headquarters in Glenville and the Marijuana Section headquartered in Romney.

Multiflora Rose Section

The Multiflora Rose Section of the Noxious Weed Program is designed as a pilot program and is being conducted initially in Gilmer, Calhoun and Wirt Counties. This pilot work also includes control demonstration areas which will be established in each of the State's 14 Soil Conservation Districts. The first of these demonstrations was conducted in the Upper Ohio Valley Soil Conservation District on June 22, 1972.

The purpose of this pilot program is to determine public interest and sentiment in such work, and also to develop control recommendations which are economically sound and which can be utilized safely and effectively to eradicate multiflora rose.

Control

An aerial survey was conducted in May, 1972 in Gilmer, Calhoun and Wirt Counties. This survey was conducted for the purpose of accurately mapping the multiflora rose infestations throughout these counties. The results of this survey were used to determine the extent of the multiflora rose problem within the pilot program work area, and to assist in developing work schedules for priority properties within this area. A total of 51 hours and 50 minutes was flown during this survey. All multiflora rose infested fields were plotted on topography quadrangle sheets. A total of 3,044 acres of multiflora rose was mapped as a result of the aerial survey.

All control work is designed to assist an equal number of landowners in the three county area. A work schedule was developed after personal contracts were made with owners of multiflora infested properties located during the aerial survey. Landowners who are full-time farmers were given top priority for multiflora rose control. Part-time farmers were scheduled for second priority and landowners who were not engaged in any type of

agriculture were given last priority.

The herbicide Tordon 10K was used for the eradication of multiflora rose on priority properties. Active field work began on May 23, 1972 and was continuing on schedule through the end of the fiscal year. Four part-time employees were utilized on this program during the fiscal year. A total of 2,440 pounds of Tordon 10K was applied to 630 acres of multiflora rose during May and June of this fiscal year. A maximum of 50 pounds of chemical was applied to each property. By limiting the amount of chemical to be used per property, a greater number of landowners became involved in this pilot work. This larger number of properties treated will provide for a more diverse evaluation of the effectiveness of the control technique under varying soil, moisture, slope and land use systems.

Marijuana Section

Eradication work began on May 26, 1972. Five part-time men were employed for this program section. Initial work involved the elimination of all stands of marijuana that had records of illegal harvesting, and all stands that are easily accessible from public roads. This work was conducted primarily in those areas of the South Branch River Valley between Romney and Moorefield. A property work schedule was developed from the results of aerial survey conducted in September, 1971 at which time 2,605 acres of marijuana were mapped in the South Branch River Valley and its tributaries.

Control

The timing of treatments is the key to successful marijuana control. The control techniques that are being used in West Virginia have been tested and proven by the states of Kansas and Illinois. Both of these states have experience in the control of marijuana and have invested considerable time and monies to the development of these techniques.

Control treatments include the application of 2,4-D granular herbicides as a pre-emergence control, 2,4-D liquid sprays as a post-emergence control tool; mowing with power brushcutters and hand tools after the plant growth exceeds the height at which the chemical is effective.

Several chemicals has been used in test treatment plots in Hampshire County. A total of 12 plots were established during May. The purpose of these plots was to evaluate the effectiveness and safety of use of various granular herbicides. The herbicides were evaluated on their effectiveness as a pre-emergence and post-emergence herbicide as well as their effect on non-target plants.

During the two months of the fiscal year, May and June, in which actual eradication work was performed, a total of 495 acres of marijuana were eradicated. All of this acreage was destroyed in Hampshire County. Active field work was continuing as scheduled when the fiscal year ended.

OAK WILT

(Federal-State Cooperative)

The objective of the Oak Wilt Program is the control of Oak Wilt, Ceratocystis fagacearum, which is potentially the most dangerous disease that threatens the forest of West Virginia. The economic importance of oak wilt control is emphasized by the fact that nearly 75 percent of the land area of the State is forested and that over one-half of the commercial forest land in the State is covered by oaks.

The disease is controlled by the "deep-girdle method" which reduces the water content in the diseased and treated tree. The reductions of essential moisture prevents the fungus from fruiting and thus prevents its spread. The diseased tree suspects are located by aerial survey. The trees are marked and recorded by the observers on topographic maps. This information is related to the ground crews who then check the suspects and verify the aerial diagnosis. All oak trees that are positively identified as being infected with oak wilt are then treated by the "deep-girdle method".

During the fiscal year a total of 2,848 trees were treated in 1,718 infection centers. The trees were located in 33 of the State's counties. The highest concentration of diseased trees were located in Grant, Mineral, Hampshire, Pendleton, Logan and Fayette Counties.

A total of 72 men and 8 aircraft were employed during the year. These men and aircraft worked from field offices located in Romney, Morgantown, Beckley, Charleston, Logan and Parkersburg.

POTATO WART

(Federal-State Cooperative)

Potato Wart, caused by the fungus Synchytrium endobioticum, once caused severe damage to potato crops in the Eastern United States. The last known area of infestation of this disease in the United States is in the town of Thomas, West Virginia. The objective of this program is the eradication of potato wart from this area and thus from the United States.

This eradication program is carried out in cooperation with West Virginia University and the United States Department of Agriculture. Potatoes susceptible to the disease are planted in areas known to have been infected with potato wart in the past. If the disease is discovered at the time of harvest, the ground in the infected field is sterilized to kill the disease fungus. Potatoes must be grown free of disease symptoms for three consecutive years before an area is declared potato wart free.

There are three remaining plots that have been treated for potato wart. These plots must produce wart free potatoes for three years before the Thomas area is declared disease free. The plots were free of potato wart during this fiscal year. If the plots remain wart free after the 1972 and the 1973 harvests are completed this program will be terminated and the disease will be considered eradicated from the United States.

STEM RUST OF WHEAT CONTROL

(Federal-State Cooperative)

Stem rust of wheat, oats, barley, and rye has been an important factor in the reduction of yields and the nutritive value of small grains for many years. This disease can reduce yields as much as 90 percent and has caused nation-wide losses of grain to exceed 200 million bushels in a single year.

Stem rust is caused by the fungus Puccinia graminis, which must complete a necessary stage of its life cycle on the leaves of certain barberry bushes. It then spreads to susceptible grain varieties causing severe damage. Control of stem rust is accomplished by eliminating rust susceptible species of barberry bushes. Stem rust control in West Virginia reduces current season infection, gene mutation in the rust organism and overland rust spread.

The native barberry, Berberis canadensis, is the primary alternate host of stem rust in West Virginia. It grows only in Monroe, Greenbrier, Summers and Mercer Counties. A total of 1,819,885 native barberry bushes were eradicated from 83,200 acres by Federal and State workers during the fiscal year. In cooperation with the Federal Stem Rust Research Laboratory located at the University of Minnesota a total of 63 rust specimen collections were made and submitted for identification. These collections were made in order to determine if any new strains of the disease have developed in West Virginia.

WHITE PINE BLISTER RUST

(Federal-State Cooperative)

The White Pine Blister Rust Program operates from field offices located in Greenbank and in Pipestem, West Virginia. The program's operational responsibility involves the protection of one-half million acres of State and private lands as well as the Monongahela National Forest. Approximately one-quarter million acres in this control area is presently producing white pine estimated to have a value of over \$7,000,000 and this value increases annually as new and improved forest management practices are employed.

The objective of this program is the control of white pine blister rust, Conartium ribicola, throughout the native white pine range of West Virginia. Commercial white pine grows as a native tree in Grant, Hampshire, Hardy, Pendleton, Preston, Greenbrier, Pocahontas, Tucker, Mercer, Monroe, Raleigh and Summers Counties. This serious disease of white pine is controlled by eradicating the alternate host (Ribes sp) of the disease. Eradication of the alternate host of white pine blister rust eliminates an important link in the life cycle of this disease, and thus prevents its continued development and spread to uninfested white pine.

During the fiscal year a total of 40,218 Ribes bushes were destroyed on 5,366 acres. Survey work was conducted on 106,748 acres of ribes infested white pine stands. This survey work was performed in order to determine if white pine would meet control standards and to map new areas of disease outbreaks.